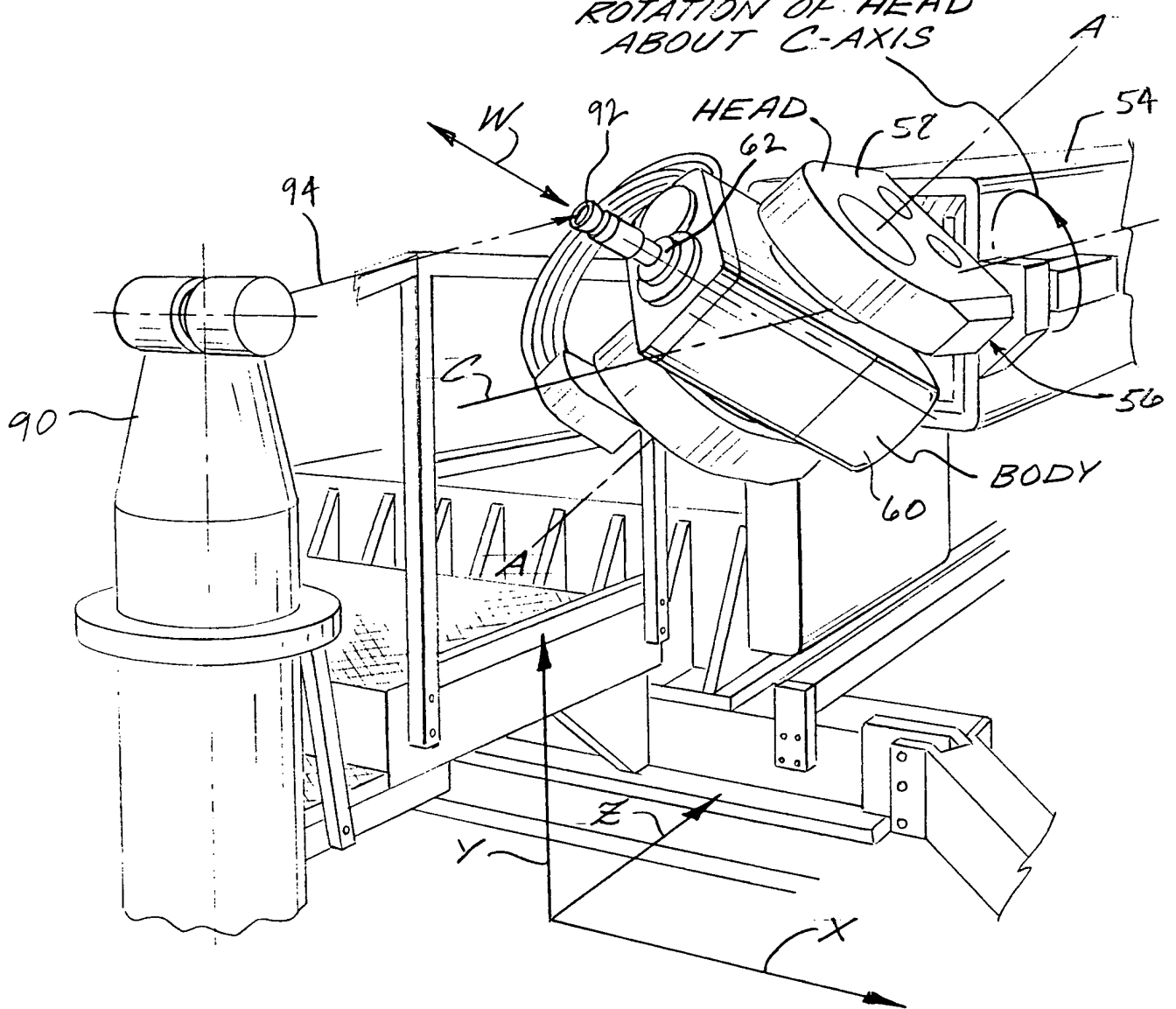


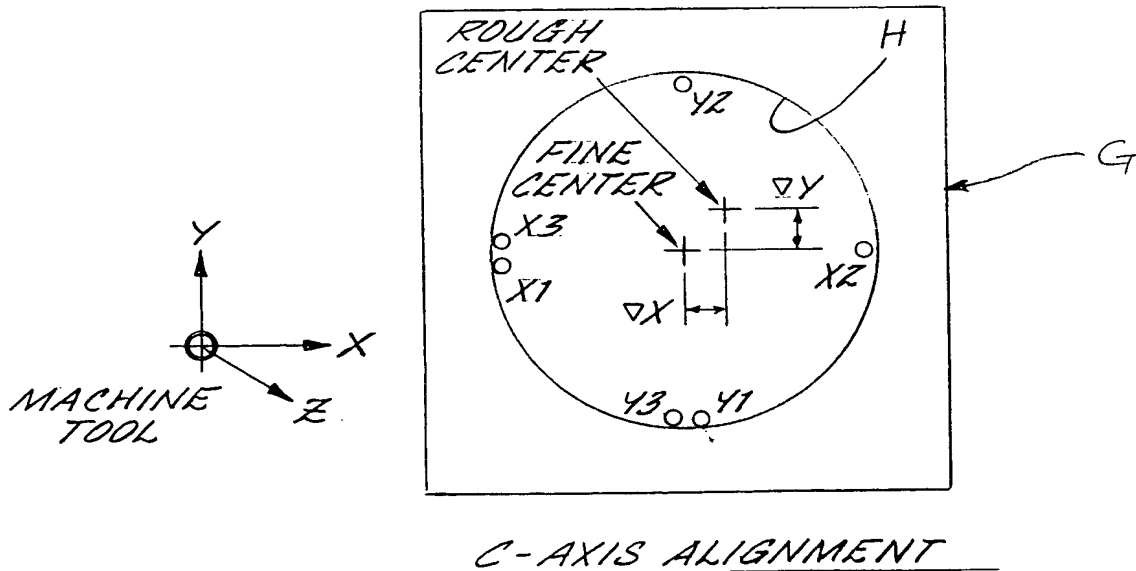
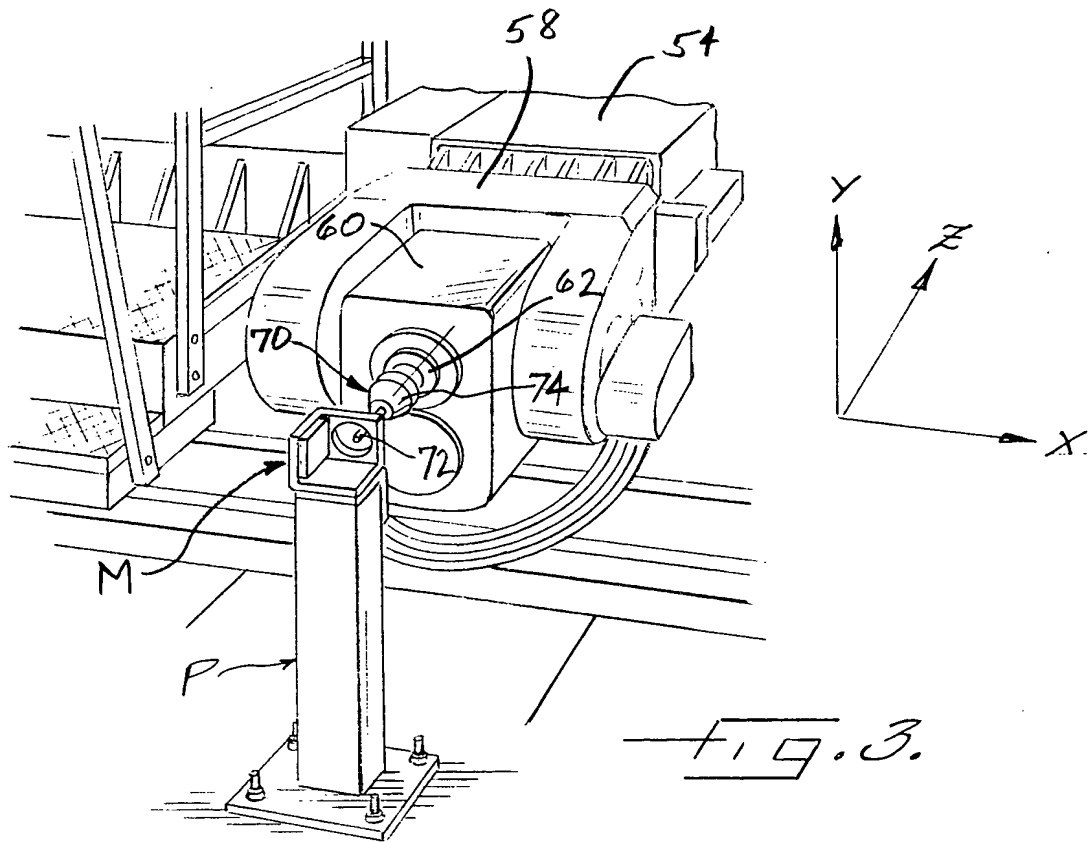
ROTATION OF HEAD
ABOUT C-AXIS

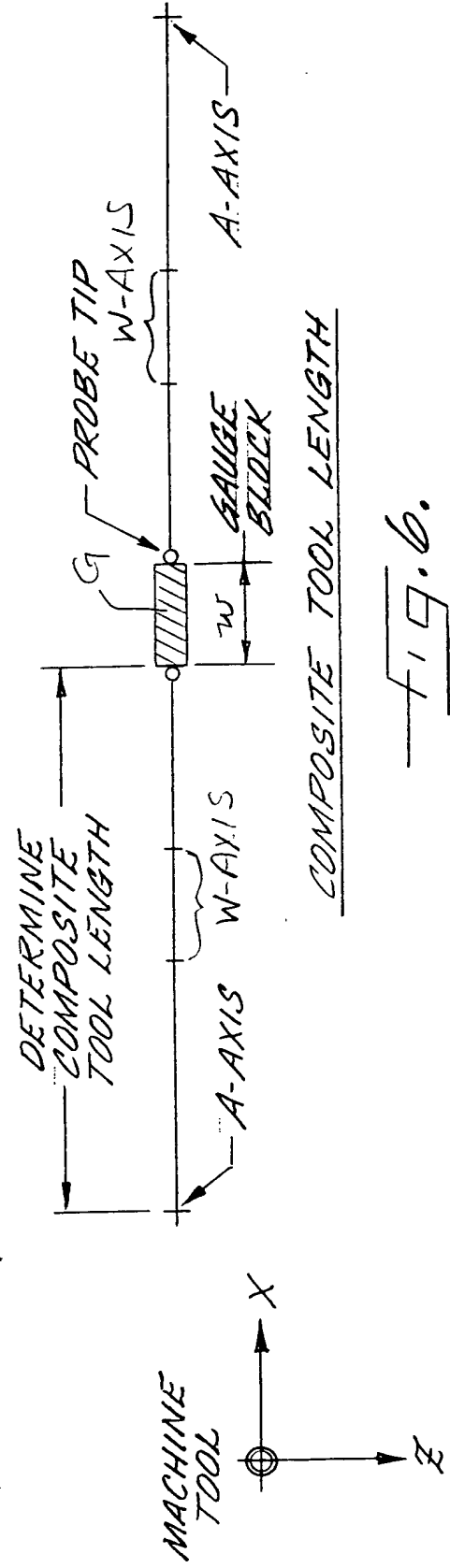
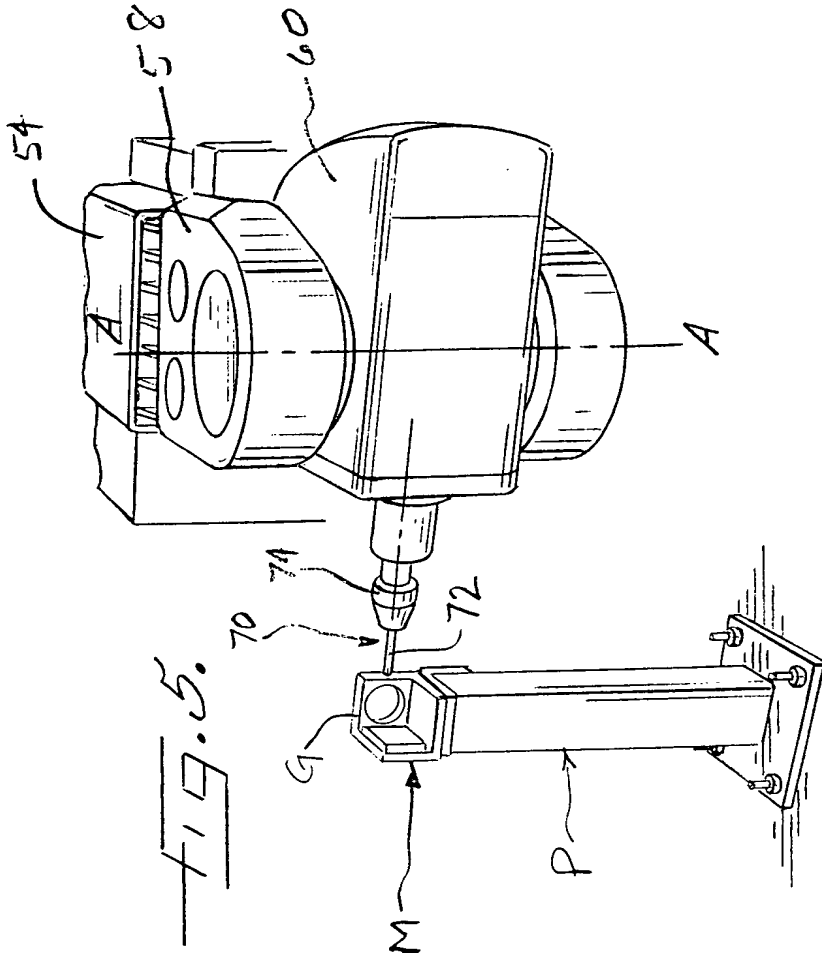


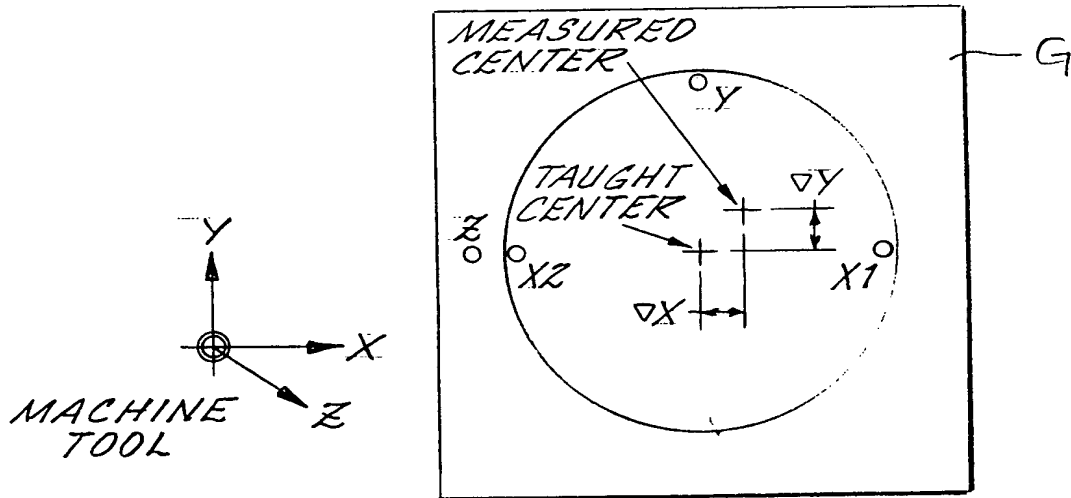
BODY ROTATES WITH RESPECT
TO HEAD ABOUT A-AXIS

FIG. 2.

000000"79223560



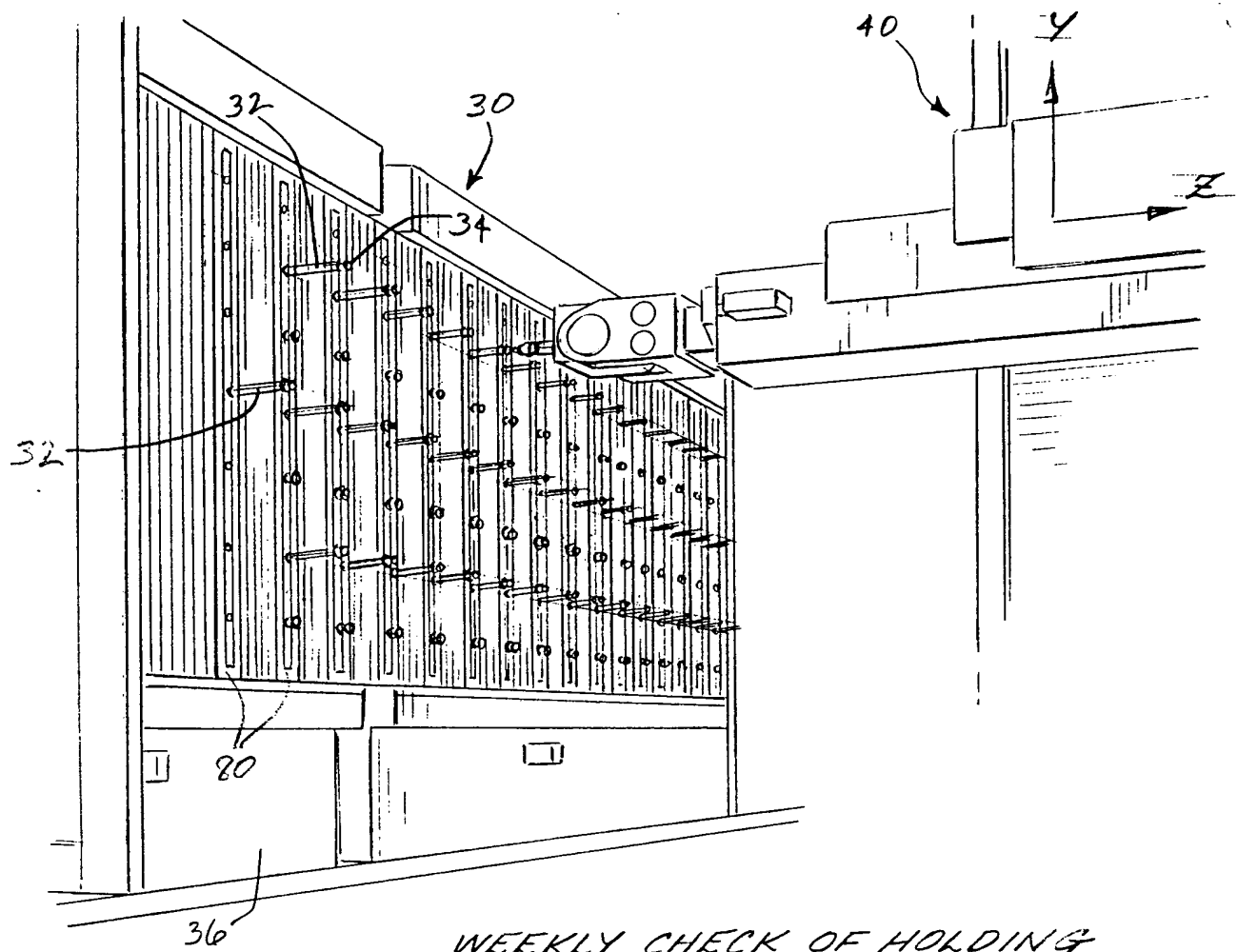




REPEATABLE POSITIONING OF MACHINE

Fig. 8.

000220" 49E2E560



WEEKLY CHECK OF HOLDING
FIXTURE RELATIVE TO THE
MACHINE

Fig. 11.

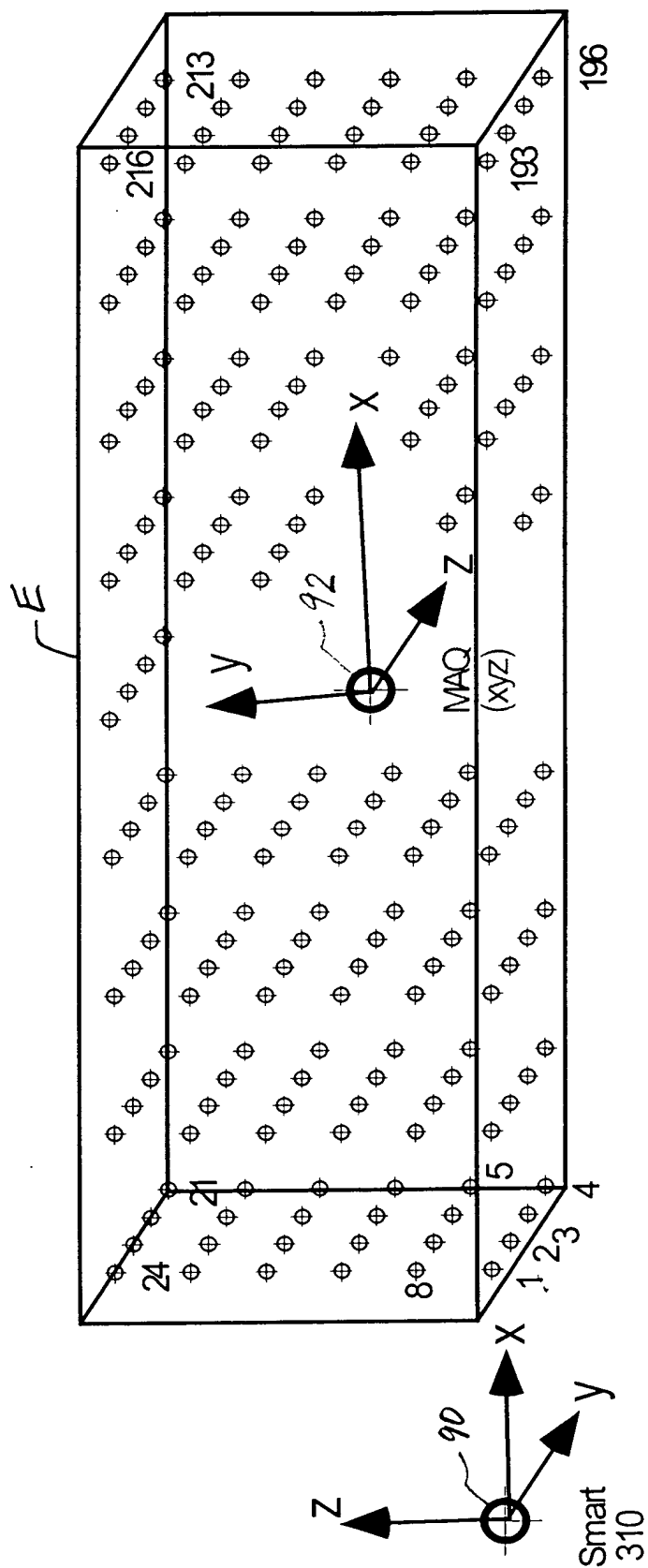
MONTHLY LASER TRACKER CHECK
OF MACHINE ACCURACY

MONTHLY LASER TRACKER CHECK
OF MACHINE ACCURACY
ALONG X, Y, Z AXES

Fig. 12.

FIG. 13B is a schematic diagram illustrating a measurement setup. A laser tracker, labeled 90, is positioned on the left. It is aimed at a cat eye reflector, labeled 92, which is mounted on a 5-axis mill, labeled 40. The distance between the laser tracker and the reflector is denoted as D. A coordinate system is shown in the upper left corner with axes X, Y, and Z. The 5-axis mill is labeled "5-AXIS MILL". The cat eye reflector is labeled "CAT EYE REFLECTOR". A bracket on the right side of the diagram indicates the view is "FIG. 13B."

Fig. 13B.

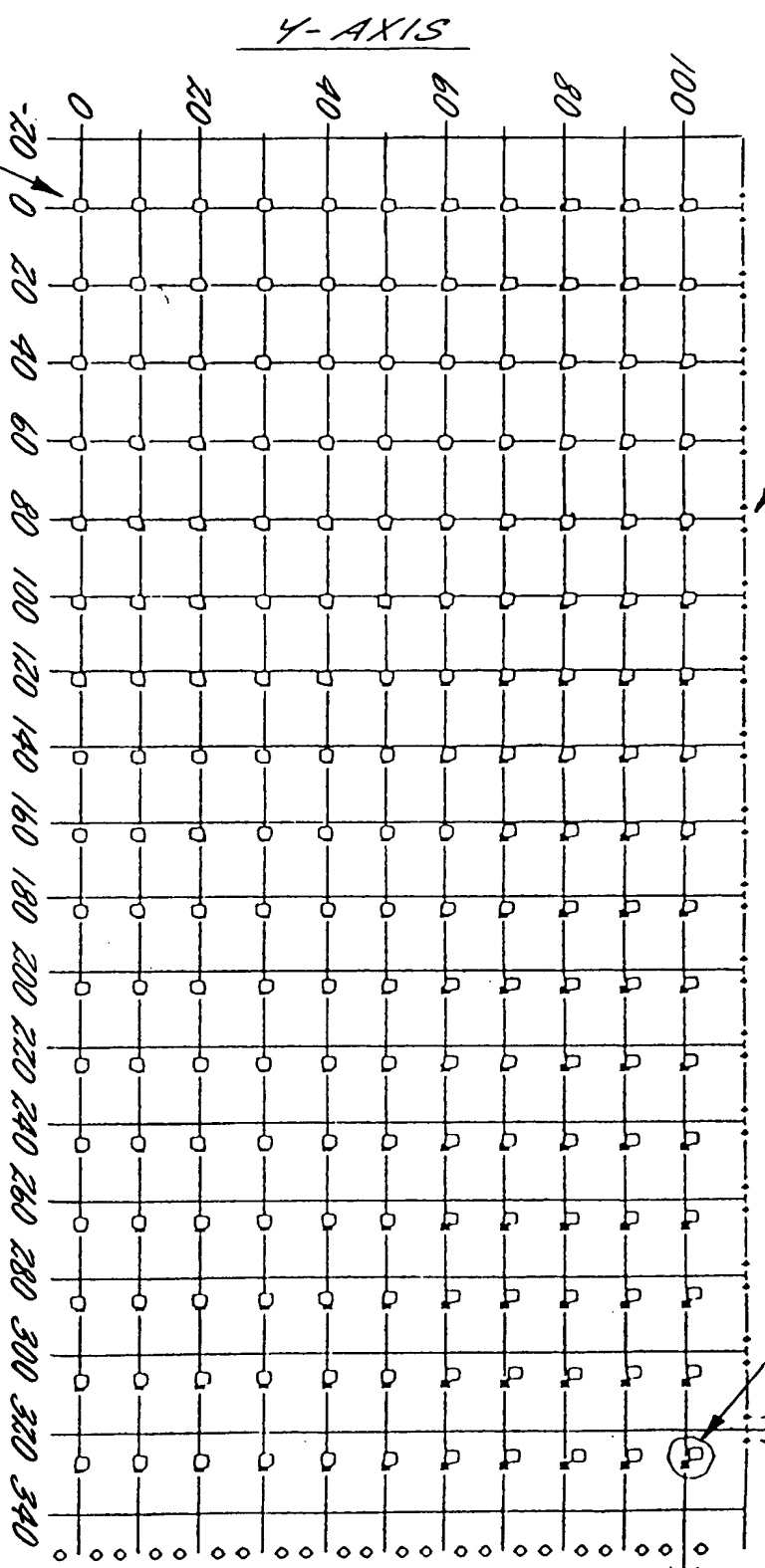


119.14.

X & Y TOLERANCE BAND
SHOWN = ± 0.010
(MAGNIFIED X 300)

PLANE #4, $Z = 44.0$

ERRORS PORTRAYED WITH
MAGNIFICATION (X 300)



LOWER-LEFT CORNER OF
UHF WORK ENVELOPE

X-Y AXES ACCURACY
CHART

Fig. 16.

- MAGNIFIED INTENDED VALUES
- ◻ MAGNIFIED MEASUREMENTS
- ♦ X-AXIS TOLERANCE
- ◊ Y-AXIS TOLERANCE

PLANE #4, $\bar{X} = 44.0$

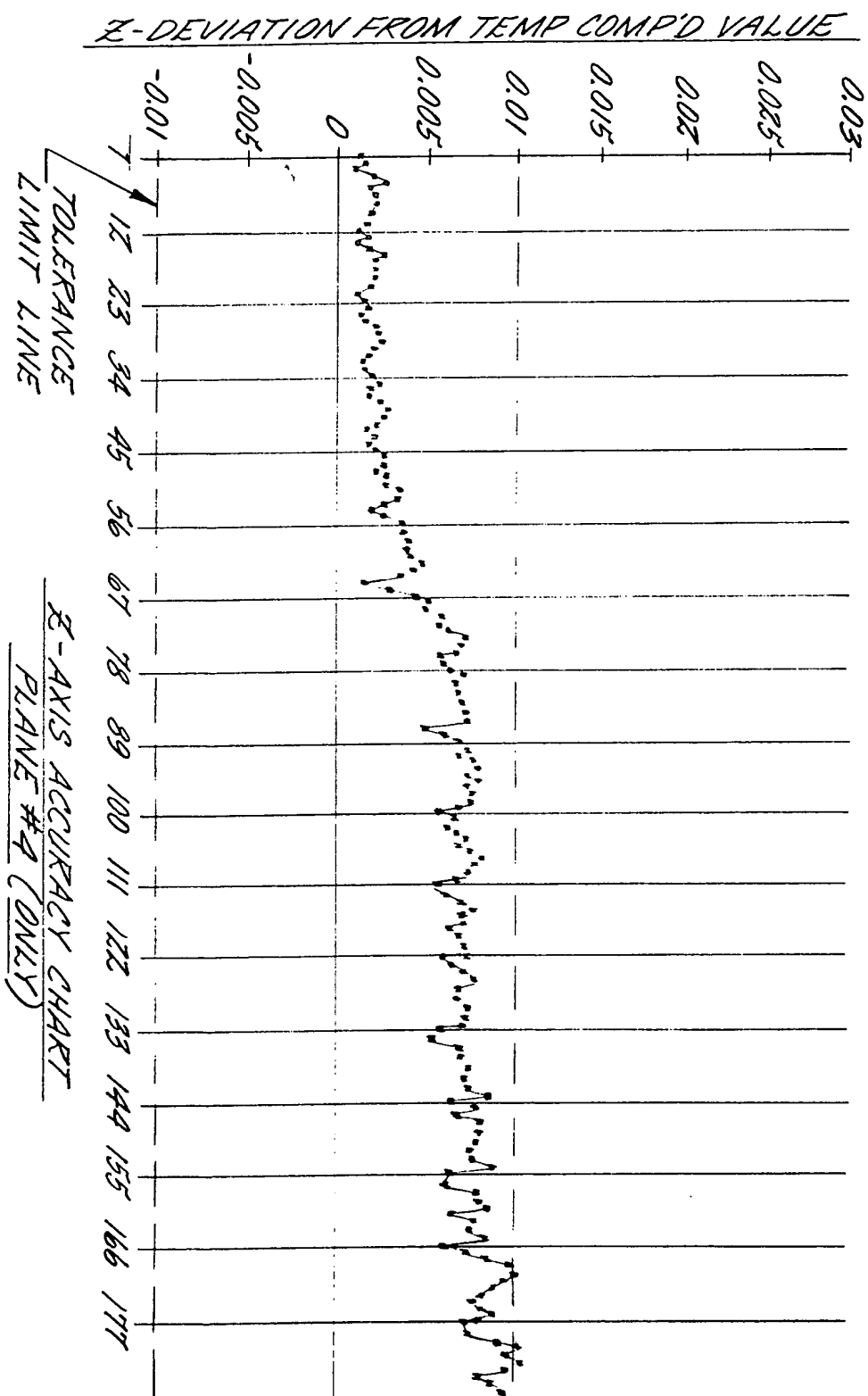
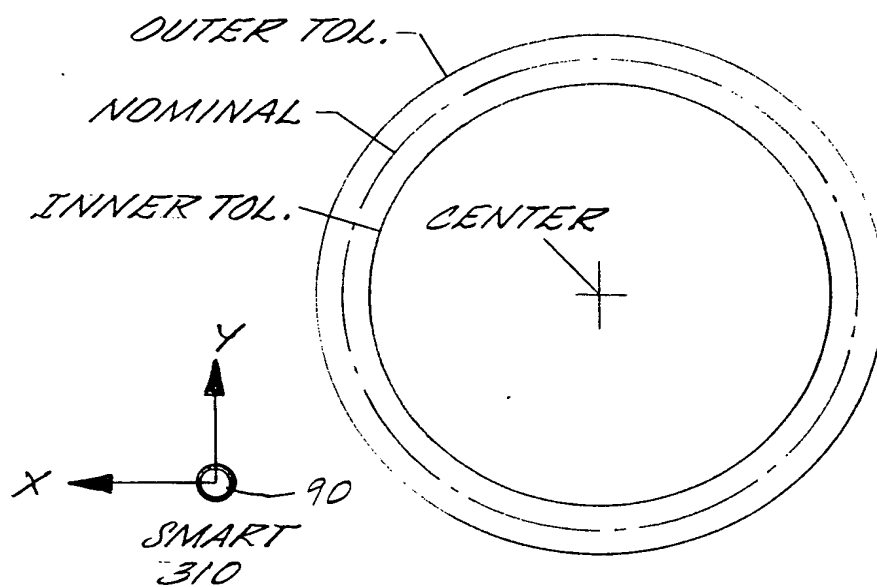


FIG. 17.

09537364, 033000



DYNAMIC MACHINE ACCURACY IN XY PLANE

Fig. 15.

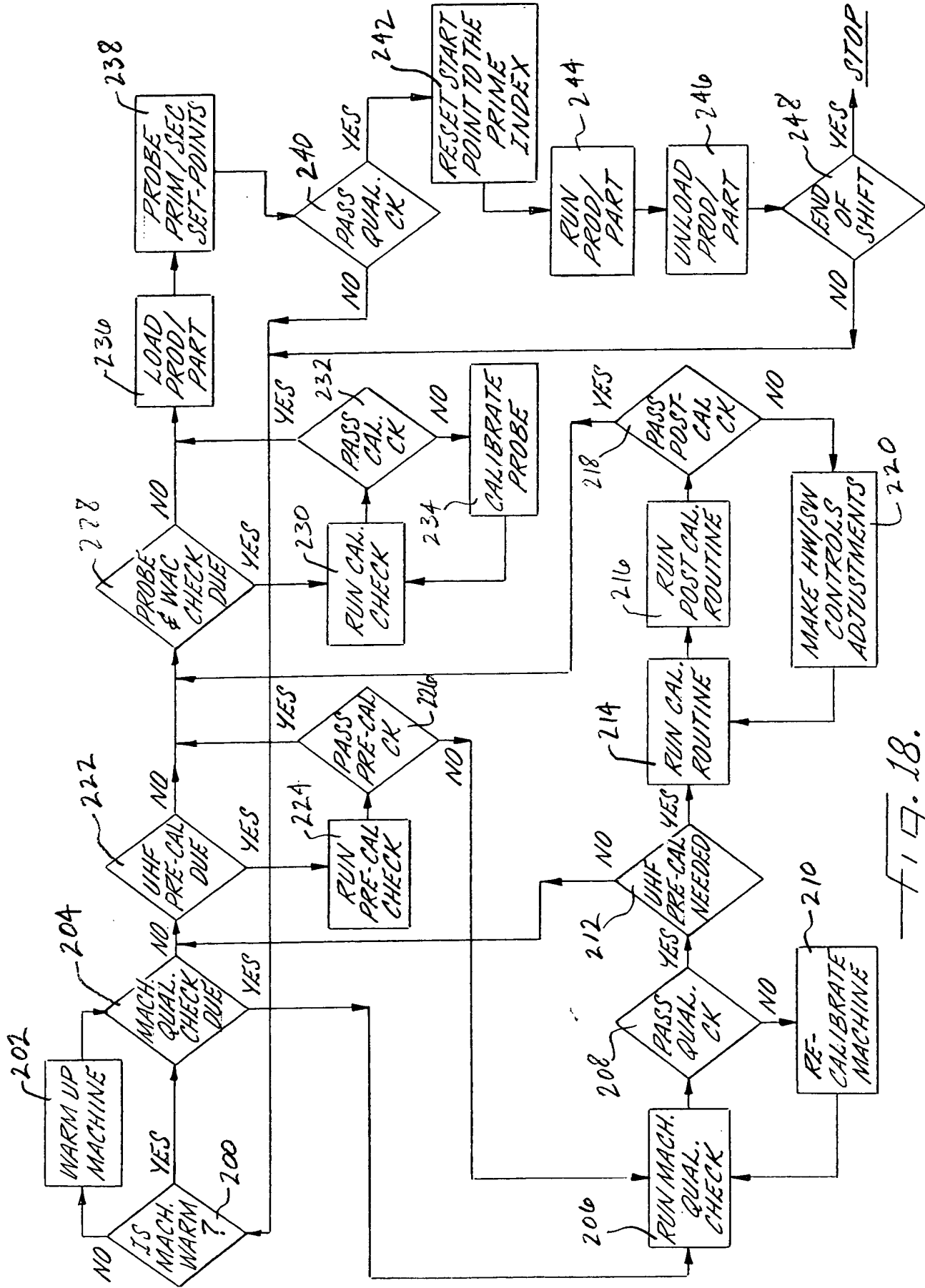


FIG. 18.

Fig. 19.

PARAMETER AFFECTING HOLE MISLOCATION	PARAMETER TOLERANCE (INCH)	ERROR CONTRIBUTION, ΔS_i (INCH)
POGO Y AND Z LOCATION	0.012	0.0071
FIXTURE SET POINT BLOCK Z ERROR	0.010	0.0042
C-AXIS OFFSET IN Y	0.003	0.0027
COMPOSITE TOOL LENGTH	0.005	0.0021
MACHINE Z ERROR	0.012	0.0101
MACHINE Y ERROR	0.012	0.0218
WAC AXIS Z ERROR	0.012	0.0051
WAC AXIS Y ERROR	0.005	0.0045
DELTA R BETWEEN POGOS	0.050	0.0120
PANEL ANGLE CHANGE EFFECT	1 DEGREE OVER 3 INCHES	0.0005
LOCATOR PIN ERROR	0.003	0.0027
DRILL C-AXIS OFFSET	0.002	0.0020
DRILL ENTRY WANDER	0.002	0.0020
	TOTAL ERROR, ΔS	0.0294

Fig. 20.